

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C.20231
 ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year)
 26 August 1999 (26.08.99)

International application No.
 PCT/AU99/00036

Applicant's or agent's file reference

International filing date (day/month/year)
 19 January 1999 (19.01.99)

Priority date (day/month/year)
 19 January 1998 (19.01.98)

Applicant

VAN DIEPEN, Gary, Joseph et al

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

13 August 1999 (13.08.99)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

C. Carrié

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

ANGLISS, Michael, L.
Davies Collison Cave
1 Little Collins Street
Melbourne, VIC 3000
AUSTRALIE

Date of mailing (day/month/year)
03 August 2000 (03.08.00)

Applicant's or agent's file reference
2146685/MJC/RR

International application No.
PCT/AU99/00036

IMPORTANT NOTIFICATION

International filing date (day/month/year)
19 January 1999 (19.01.99)

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

Name and Address

VAN DIEPEN, Gary, Joseph
89 Duff Street
Cranbourne, VIC 3977
Australia

State of Nationality

AU

State of Residence

AU

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☒ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

PEETERS, Gary
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Cranbourne, VIC 3977
Australia

State of Nationality

AU

State of Residence

AU

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☐ the International Searching Authority ☒ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Philippe Bécamel

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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

ANGLISS, Michael, L.
Davies Collison Cave
1 Little Collins Street
Melbourne, VIC 3000
AUSTRALIE

Date of mailing (day/month/year) 17 July 2000 (17.07.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 2146685/MJC/RR	
International application No. PCT/AU99/00036	International filing date (day/month/year) 19 January 1999 (19.01.99)

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address

CRC FOR POLYMERS PTY. LTD.
32 Business Park Drive
Notting Hill, VIC 3168
Australia

State of Nationality

AU

State of Residence

AU

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☒ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

POLYMERS AUSTRALIA PTY LIMITED
32 Business Park Drive
Notting Hill, VIC 3168
Australia

State of Nationality

AU

State of Residence

AU

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☐ the International Searching Authority ☒ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Philippe Bécamel

Telephone No.: (41-22) 338.83.38

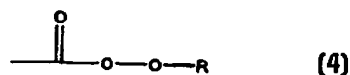
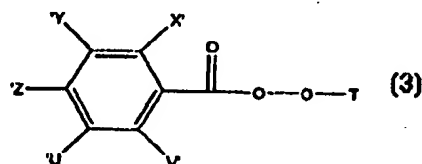
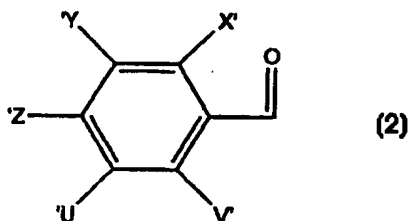
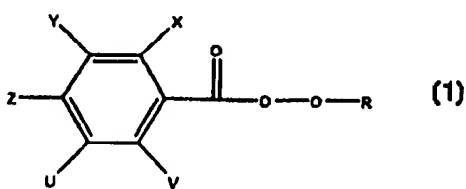
PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification: ⁶ C08K 5/14, C08J 3/24, C08L 23/12, 23/26		A1	(11) International Publication Number: WO 99/36466
			(43) International Publication Date: 22 July 1999 (22.07.99)
(21) International Application Number: PCT/AU99/00036		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 19 January 1999 (19.01.99)		Published With international search report.	
(30) Priority Data: PP 1393 19 January 1998 (19.01.98) AU PP 1392 19 January 1998 (19.01.98) AU			
(71) Applicant (for all designated States except US): CRC FOR POLYMERS PTY. LTD. [AU/AU]; 32 Business Park Drive, Notting Hill, VIC 3168 (AU).			
(72) Inventors; and (75) Inventors/Applicants (for US only): VAN DIEPEN, Gary, Joseph [AU/AU]; 89 Duff Street, Cranbourne, VIC 3977 (AU). O'SHEA, Michael, Shane [AU/AU]; 4 Worthington Court, Mulgrave, VIC 3170 (AU). MOAD, Graeme [AU/AU]; 9 Clarkmont Road, Sassafra, VIC 3787 (AU).			
(74) Agents: ANGLISS, Michael, L. et al.; Davies Collison Cave, 1 Little Collins Street, Melbourne, VIC 3000 (AU).			

(54) Title: PROCESS FOR INCREASING THE MELT STRENGTH OF POLYPROPYLENE



(57) Abstract

A process for modifying a polypropylene (co)polymer wherein said process comprises melt mixing the polypropylene (co)polymer in the presence of an initiator wherein said initiator is selected from the group defined by formula (1), wherein R is selected from the group consisting of optionally substituted C₁ to C₁₈ acyl, optionally substituted C₁ to C₁₈ alkyl, aroyl defined by formula (2), and compounds of formula (3), wherein U, V, X, Y, Z, U', V', X', Y' and Z' are independently selected from the group consisting hydrogen; halogen; C₁-C₁₈ alkyl; C₁-C₁₈ alkoxy, aryloxy, acyl, alkoxy, aryl, carboxy, alkoxy, aryloxy, alkyl, silyl, hydroxy, or a moiety of formula (4), and wherein T is alkylene.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 99/00036

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl⁶: C08K 5/14, C08J 3/24, C08L 23/12, 23/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC: as above

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPAT & JAPIO: melt() or molten or initiator

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97/49759 A (AKZO NOVEL N.V.) 31 December 1997 See page 8 lines 15-23, Example 18	1,3,10,16,18
X	EP 0601682 A (ROHM AND HAAS COMPANY) 15 June 1994 See page 6 lines 50-55, Examples 1, 4 and 6	1,4,6,12,15-16,18
X	EP 0528600 A (ROHM AND HAAS CO.) 24 February 1993 See column 4 lines 25-55, Examples 1, 3-5 and claim 9	1,4,6,12, 15-16,18

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search
8 February 1999

Date of mailing of the international search report
12 FEB 1999

Name and mailing address of the ISA/AU
AUSTRALIAN PATENT OFFICE
PO BOX 200
WODEN ACT 2606
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Authorized officer

ALBERT S. J. YONG

Telephone No.: (02) 6283 2160

INTERNATIONAL SEARCH REPORT

C (Continuation).		International application No. PCT/AU 99/00036
DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Derwent Abstract accession No. 91-011054/02, Class A17 E17, JP 02283-742 A (TOYADA GOSEI KK) 21 November 1990	
X	Derwent Abstract Accession No. 94-313853/39, Class A17, JP 06240096 A (DAI NIPPON INK & CHEM INC) 30 August 1994	1,16,18
A	US 5578682 A (WHITE) 26 November 1996 See whole document	1,12,16,18
		1,16,18

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/AU 99/00036

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
WO	97/49759	AU	32584/97		
EP	601682	AT	162621	AU	36753/93
		CA	2093484	DE	69316723
		HU	66372	IL	105359
		MX	9302288	NO	931357
		ZA	9302747	BR	9302087
				FI	931760
				JP	6207055
				US	5397842
EP	528600	AU	20991/92	BR	9203212
		FI	923712	HU	64091
		JP	5230293	MX	9204774
		US	5397842	ZA	9206053
US	5578682	CA	2220000	CZ	9703718
		PL	323499	WO	9637521
				EP	828761
END OF ANNEX					

REC'D 15 MAR 2000

WIPO PCT

Applicant's or agent's file reference 2146685/MJC/TJL	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. PCT/AU99/00036	International filing date (<i>day/month/year</i>) 19 January 1999	Priority Date (<i>day/month/year</i>) 19 January 1998
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ C08K 5/14, C08J 3/24, C08L 23/12, 23/26		
Applicant CRC FOR POLYMERS PTY LTD		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of 4 sheets, including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of 11 sheet(s).
3.	This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application

Date of submission of the demand 13 August 1999	Date of completion of the report 23 February 2000
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer ALBERT S. J. YONG Telephone No. (02) 6283 2160

I Basis of the report

1. With regard to the elements of the international application:*
- ☐ the international application as originally filed.
- ☒ the description, pages 1-2,6,9-57, as originally filed,
pages 3-5,7-8, filed with the demand,
pages , filed with the letter of .
- ☒ the claims, pages 60-62 , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages 59 , filed with the demand,
pages 58,63-66 , filed with the letter of 26 November 1999 .
- ☐ the drawings, pages , as originally filed,
pages , filed with the demand,
pages , filed with the letter of .
- ☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , filed with the letter of .
2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished
4. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims 1-19	YES
	Claims	NO
Inventive step (IS)	Claims 1-19	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-19	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)**CITATIONS**

WO 97/49759A
EP 0601682A
EP 0528600A
JP 02283742A
JP 06240096A

NOVELTY (N) AND INVENTIVE STEP (IS)

Claims 1-19: The claimed invention relates to a method of increasing the melt strength of a polypropylene copolymer, which method involves melt-mixing the polypropylene polymer in the presence of a specific class of initiators. None of the above citations discloses such a process. The closest art of JP 06240096A discloses melt-mixing polypropylene with an aromatic vinylic monomer in the presence of a radical initiator. However, the use of the particular class of initiators of the present invention is not taught.

INDUSTRIAL APPLICABILITY

The claimed invention is industrially applicable.

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The description on page 5 line 22 (filed with the Demand) is repeated on page 6 line 1 (originally filed), and page 62 line 30 (originally filed) is repeated on page 63 line 1 (filed with letter of 26 November 1999).